UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
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ATLANTA, GEORGIA 30303-8960

August 8, 2011

Barry Stephens
Director
Division of Air Pollution Control
9th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1531

Dear Mr. Stephens:

Thank you for sending the prevention of significant deterioration (PSD) permit application for the proposed U.S. Nitrogen facility to be located in Green County, Tennessee, which we received July 7, 2011. The project is for the construction of a new greenfield facility to manufacture nitric acid, ammonia, and ammonia nitrate solution. According to the application, total emissions from the proposed project are above the thresholds requiring PSD review for nitrogen oxides (NO_x) and Greenhouse Gases (GHGs).

Based on our review of the PSD permit application, we have the following comments regarding the NO_x and GHG best available control technology (BACT) analyses. We provide these comments to help ensure that the project meets all federal requirements, that the permit will provide all necessary information so that it is readily accessible to the public, and that the record provides adequate support for the permit decision.

Applicability and Emission Calculations

1. The calculations used to generate table 2-1 are unclear based on the data included. For instance, the nitrogen dioxide (NO_2) emissions from the Nitric Acid plant in Appendix B are 26 lb/hr and 113.88 tons per year (TPY). The NO_2 modeling, however, seems to use a value of 28 lb/hr and the permit application cites a value of 23 lb/hr and 26 lb/hr (maximum). The 1.9 lb of NO_x per ton of HNO_3 (nitric acid) emissions rate implies a NO_x emission rate of 39.58 lb/hour and 173.38 tons per year assuming 8,760 hours and the projected production rate. Each of the values and the derivative values (lb/hour, lb/ton of HNO_3, etc) used in various parts of the permit application for BACT and the modeling need to be documented and made consistent. While having consistent emission rates throughout the permit is important, it is especially important for carbon monoxide (CO) and particulate matter (PM), since those values are so close to the PSD significant emission rates. We suggest Appendix B be expanded to clearly explain all the emission calculations.

Nitric Acid Plant

2. It is difficult for EPA to evaluate the economic analysis in table 4-7 because the vendor quotes, engineering estimates and cost analysis worksheets were not included. We suggest these items be added as an appendix.

3. It is unclear what tertiary treatment options are being considered for control of nitrous oxide (N_2O). Specifically, the percent reductions are provided but not the associated technology. Please clarify what control options are being evaluated (*e.g.*, nonselective catalytic reduction (NSCR), catalytic decomposition, etc.).

4. The conclusion of the BACT analysis that secondary or tertiary N_2O emission controls are inappropriate as BACT for the nitric acid plant needs a better documented basis than that included in the application. The applicant should consider comparable technologies to those used by other similar plants, or explain why this facility is unique and the other technologies are inappropriate for US Nitrogen's proposed facility. There are a number of nitric oxide plants currently in operation with NSCR. These facilities include:

   - Agrium—West Sacramento, CA (1 line)
   - Dyno Nobel—Cheyenne, WY (3 lines)
   - Dyno Nobel—St Helens, OR (1 line)
   - Dyno Nobel—Battle Mountain, NV (1 line)
   - Dyno Nobel—Donora, PA (1 line)
   - El Dorado Nitrogen—Cherokee, AL (1 line)
   - J R Simplot—Helm, CA (1 line)
   - Koch Nitrogen—Beatrice, NE (1 line)
   - Koch Nitrogen—Dodge City, KS (1 line)
   - Koch Nitrogen—Enid, OK (1 line)
   - PCS Nitrogen—Augusta, GA (1 line)
   - PCS Nitrogen—Geismar, LA (1 line)

5. While the applicant has proposed selective catalytic reduction (SCR) for control of NO_x, we note that NSCR can be expected to achieve similar NO_x reduction. Furthermore, NSCR reduces N_2O as well (while SCR does not), so there are additional CO_2e benefits from the use of NSCR. Specifically, The N_2O reduction benefits of using NSCR are discussed in the EPA white paper "Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from the Nitric Acid Production Industry" (http://www.epa.gov/nsr/ghgdocs/nitricacid.pdf). Thus, NSCR should be evaluated for control of NO_x emissions and the environmental co-benefit of using NSCR for reducing N_2O should be acknowledged in the environmental impacts section of the BACT analysis.

6. The cost analyses in table 4-4 through 4-7 do not appear to be consistent with the EPA cost manual. While variation from the cost manual is allowed, the basis for the variation needs to be documented. In particular, the use of 13% for the expected cost of money and a 10 year depreciation period are departures from typical values used for this type of project. Specifically, the type of equipment being evaluated typically has a 20 year useful life (*see* EPA's Cost Control Manual), and the cost of money should reflect the actual cost to borrow funds or industrial bond rates, rather than a company-established internal rate of return. If there are reasons for this particular project to deviate from the standard 7% cost of money and a 20 year useful life, documentation should be provided to support such a deviation.

7. The NSCR cost analysis for NO_x control includes capital costs for an energy recovery unit. The avoided cost of energy due to the recovery unit should be included and this savings likely will

offset the annual cost of the unit. If it does not, please explain why it is being included as a necessary cost. Additionally, the catalyst life for NSCR of 2-3 years is shorter than what we would anticipate. The applicant should provide documentation to support the estimated catalyst life of less than 5 years.

8. The NO_x emission limit of 1.9 lb/ton of HNO_3 is well above the values we would expect from SCR. There needs to be a better analysis of what the expected actual level of performance using SCR would be and why this new facility is unique in needing such a high value. There are a number of nitric oxide plants currently in operation with SCR that can meet lower NO_x limits. These facilities include:

   - PCS Nitrogen—Geismar, LA
   - Agrium—North Bend, OH
   - El Dorado Nitrogen—Baytown, TX

   Please note that we would expect any BACT limits to include startup and shutdown emissions.

9. As noted above, the NO_x emission limit of 1.9 lb/ton of HNO_3 is inconsistent with the modeled NO_x emission rate and the emission rates in the permit application. The applicant needs to correct or explain this discrepancy.

10. According to the application, the plant will produce weak (30-70%) HNO_3 but it is unclear what basis is used for the proposed emission limit, which is on a per ton of HNO_3 basis. We assume all estimates have been corrected to 100% HNO_3. Please have the applicant clarify this and we suggest that the department specify the concentration when setting emission limits.

Finally, the applicant has marked several items as Confidential Business Information (CBI). Please note that emission data, as well as data needed to calculate emissions, are not considered CBI by EPA. If a request for a copy of the permit application is made to EPA, an official CBI determination would be made at that time before any information is released to the public.

If you have any questions regarding these comments or need additionally information, feel free to contact John Calcagni at 919-541-9775 or Katy R. Forney at 404-562-9130.

Sincerely,

Gregg M. Worley

Gregg M. Worley
Chief
Air Permits Section